

ACC NR: AP700573

SOURCE CODE: UR/0139/66/000/006/0125/0127

AUTHOR: Bashmakova, M. I.; Mitskevich, P. K.

ORG: Dnepropetrovsk Institute of Civil Engineering (Dnepropetrovskiy inzhenerno-stroitel'nyy institut)

TITLE: The effect of electric field on the electroconductivity of solid and liquid organic semiconductors

SOURCE: IVUZ. Fizika, no. 6, 1966, 125-127

TOPIC TAGS: <sup>solid</sup>semiconductor, organic semiconductor, naphthalene, ~~semiconductor~~, semiconductor conductivity, liquid semiconductor, ~~liquid semiconductor conductivity~~ *electric conduction, electric field, current carrier*

ABSTRACT: The article summarizes experimental results obtained earlier by the authors and other investigators on the electroconductivity of certain naphthalenes in their solid and liquid phases. The experiments were conducted with 2-mm-thick specimens at field intensities up to 30,000 v. The current-voltage characteristics for naphthalene and beta-methylnaphthalene in general displayed a linear interdependence, with little difference between the solid and liquid phase. A straight linearity was observed at field intensities of  $2 \times 10^3$ — $4 \times 10^3$  v/cm for the solid phase and  $10^4$  v/cm for the liquid state. This linearity was also maintained at different temperatures, although the limit of validity of Ohm's law was reduced from  $7 \times 10^3$  to  $1.5 \times 10^3$  v/cm with a change in temperature

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UDC: none

ACC NR: AP7005735

from 17 to 38C. For the liquid state, the interval extends to  $10^4$  v/cm when the temperature is 80C above the melting point. No changes were observed in the thermal activation energy for both solid and liquid phases, or in the discontinuity of the conductivity at fusion. In the region where the interrelationship deviates from Ohm's law, the thermal energy of the activation of conductivity diminishes with the growth of field intensity, especially for the solid phase. For solid beta-methylnaphtalene, for example, the activation energy drops from 3.12 to 1.71 ev when field intensity increases from  $10^3$  to  $10^4$  v/cm, while no change of activation energy was observed for the liquid state under the same conditions. The latter is explained by the high equilibrium concentration of current carriers resulting from the exciton decay, which, in turn, is caused by the increasing number of reorienting molecules in the heated medium.

Orig. art. has: 2 figures.

[FP]

SUB CODE: 20/ SUBM DATE: none/ ATD PRESS: 5115

Card 2/2

1. PRONINA, T. V. and VASILEVA, N. I.
2. USSR (600)
4. Alapayevsk District - Geology
7. Geological map of the Urals (Scale 1:50,000, sheet 0-41-76-G) (Alapayevsk region).  
Abstract Izv.Glav.upr.geol.fon. No. 2, 1947.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

uchastnye: GAVRILOVA, E.F., inzh.-khimik; KAZANTSEVA, A.I., inzh.-khimik; LOGVINA, L.A., inzh.-khimik; USLONTSEVA, L.A., inzh.-khimik; GUDIMENKO, L.F., inzh.; NAZAREVICH, Ye.S., inzh.; SHKVARUK, R.N., inzh.; ORLOVA, L.A., inzh.; BASHMAKOVA, S.G., inzh.-geolog; BURKSER, Ye.S., otv. red.; MEL'NIK, A.F., red.

[Geochemistry and analytic chemistry of rare-earth elements. Pt.1. Accessory rare-earth minerals and elements of the cerium subgroup in the Ukrainian Crystalline Shield] Geokhimiia i analiticheskaia khimiia redkozemel'nykh elementov. Kiev, Naukova dumka. Pt.1. Aktsessornye redkozemel'nye mineraly i elementy tserievoi podgruppy ukrainskogo kristallicheskogo shchita. 1964. 164 p. (Akademiia nauk URSR. Instytut geologichnykh nauk. Trudy. Seriia petrografii, mineralogii i geokhimii, no.21). (MIRA 18:1)

1. Chlen-korrespondent AN UkrSSR (for Burkser).

BASHMAKOVA, S.M., BASKINA, R.I.

Triple dye, gramicidin, and mercurochrome for the prevention and  
treatment of purulent skin diseases. Sbor.nauch.rab.Bel.nauch.-  
issl.kozhno-ven. inst. 4:23-25 '54 (MIRA 11:7)  
(SKIN--DISEASES)  
(MERBROMIN)

DYLO, P.V., CHERNYAK, B.N., BASHMAKOVA, S.M., ROMANOVSKAYA, N.Yu., KLDNITSKAYA,  
T.L., GRINGAUZ, M.Ya.

Some causes for the unsatisfactory decline in the incidence of  
gonorrhea and ways in which they may be eliminated. Sbor.nauch.  
rab.Bel.nauch.-issl.kozhno-ven. inst. 4:309-314 '54 (MIRA 11:7)  
(GONORRHEA)

DYLO, P.V., dotsent; SOSNOVSKIY, A.T., kand.med.nauk; BUSHLEVA, TS.D.;  
BASHMAKOVA, S.M.; LEBEDEVA, I.P.

Bicillin in the treatment of gonorrhea. Zdrav. Belor. 5 no.10:  
32-33 0 '59. (MIRA 13:2)

1. Iz kafedry koshvenbolezney Minskogo meditsinskogo instituta,  
Belkoshveninstituta i Minskogo gorvendispensera.  
(PENICILLIN) (ETHYLENEDIAMINE) (GONORRHEA)

PROKOPCHUK, A.Ya.; BASHMAKOVA, S.M.; SERZHANINA, A.N.

Pathogenesis of lupus erythematosus. Lesion of the hypothalamus. Sbor.  
nauch.rab.Bel.nauch.-issl.kozhno-ven.inst. 6:259-270 '59. (MIRA 13:11)  
(LUPUS)  
(HYPOTHALAMUS--DISEASES)



DYLO, P.V., dotsent; BUSHELEVA, TS.D.; BASHMAKOVA, S.M.

Phenoxymethylpenicillin in the treatment of acute gonorrhea.  
Zdrav.Bel.9 no.2:48-49 F'63. (MIRA 16:7)

1. Minskiy gorodskoy kozhno-venerologicheskii dispanser.  
(GONORRHEA) (PENICILLIN)

ACC-NR: AP6036804

A) SOURCE CODE: UR/0240/66/000/011/0078/0081

AUTHOR: Bashmakova, T. A.; Sukal'skaya, S. Ya.; Nikiforova, O. A.; Permyakov, A. A.

ORG: none

TITLE: Radiation-hygienic evaluation of ground in which radioactive wastes are buried

SOURCE: Gigiyena i sanitariya, no. 11, 1966, 78-81

TOPIC TAGS: radioactive waste disposal, radioactive waste disposal equipment, radio-activity measurement

ABSTRACT: The area observed, in use since 1962 has a complex of installations, including depositories for fluid and solid waste products, a place for decontaminating machines, and containers, etc. The study tested air pollution and variations in the radioactivity rate in operations connected with the transport and disposal of the waste products. Two main sources of pollution were the ventilation systems in the buildings and the sewage where it reached open reservoirs.  $Sr^{90}$ ,  $Cs^{137}$ ,  $Ce^{144}$ , and  $Ra^{226}$  were used as indicators. For control of the radioactivity level determined by aerial fallout, activity of the deposits and the settled dust, density fallout rate of  $Sr^{90}$  and  $Cs^{137}$ , aerosol air activity on the studied territory, adjacent ground, including plants, were measured. Samples were selected at various times of year. The control point was 8 km from the object. A total of 107 deposit and dust samples and 48 plant

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UDC: 614.73:621.039.7

ACC NR: AP6036804

samples were investigated. In two years, the untreated sewage produced no observable effects on the zone adjacent to the open reservoir. Occasional pollution of the territory and sanitary-protective zone was effected by the ventilation exhaust. The pollution was insignificant (within permissible limits) and did not exceed the limits of the sanitary-protective zone. The working personnel revealed no specific health impairment in the course of the three year study, and the exposure to radiation doses was within permissible limits. Orig. art. has: 3 tables.

SUB CODE: 18,06/

SUBM DATE: 03Jun65/

ORIG REF: 002

Card 2/2

BASHMAKOVA, T. A., PAVLOVA, Z. K., GURFEYN, L. N. and IOFAN, S. S.

"Experimental Substantiation of the Maximum Permissible Concentration of Nitrochlor-benzene in Water when Releasing Runoff Water into Reservoirs," paper presented at the Scientific Conference of the Leningrad Sanitation Institute, 8-10 May 1956.

U-3,054,017

BASHMAKOVA, V.A.

How to create the necessary yarn tension on the RM-3 strength-testing machine. Tekst.prom. 20 no.10:45-47 0'60. (MIRA 13:11)

1. Zaveduyushchiy laboratoriyey Ferganskogo tekstil'nogo kombinata imeni Dzerzhinskogo.  
(Yarn--Testing)

5(2)

AUTHORS: Zaykovskiy, F. V., Bashmakova, V. S. SOV/75-14-1-2/32

TITLE: Photometric Determination of the Sum of Rare Earth Elements in Ores and Rocks (Fotometricheskoye opredeleniye summy redkozemel'nykh elementov v rudakh i porodakh)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 1, pp 50-54 (USSR)

ABSTRACT: A photometric method for the determination of 0.01% - 3% of the sum of rare earths in ores and rocks is worked out in the present paper. This is a continuation of earlier published research works (Refs 1, 2). The determination takes place by the aid of arsen-azo. The optical density of the solutions was measured on a photo-colorimeter FEK-M by the aid of green filters ( $\lambda = 570m\mu$ ). Equimolar quantities of the cerium and yttrium group elements possess almost the same optical density. An increase of yttrium content in the sum of rare earths causes an increase in optical density. In the presence of sulfo-salicylic acid titanium (IV) and zirconium scarcely influence the optical density, whereas thorium causes it to increase. In the presence of 50 mg sulfosalicylic acid on 25 ml solution

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Photometric Determination of the Sum of  
Rare Earth Elements in Ores and Rocks

SOV/75-14-1-9/32.

calcium in quantities up to 6 mg does not influence the optical density of the solution, while larger quantities of Ca increase it a little. Thoron, arsen-azo and Schiff bases are suitable for separating small amounts of thorium. The corresponding thorium complexes are formed, that can be separated by the aid of active carbon. The reagent must be present in large surplus, as it is likewise adsorbed by active carbon. Most suitable is the use of the easily obtainable Schiff base from salicyl-aldehyde and o-amino arsonic acid (o-aminophenyl arsonic acid is probably meant here). Zirconium behaves in much the same way as thorium. The following method was employed for separating the rare earths from the accompanying elements: oxalate ion forming from the hydrolysis of acetone dioxalic acid yields a coarse-crystalline precipitate of oxalates of the rare earths (Ref 2). The rare earth separation according to this method is described in detail, as well as the further processing of the rare earths and the photometric determination. The solutions of the rare earths complexes with arsen-azo follow the Beer law. The determination errors amount to 20 - 5%, but also higher deviations may occur. The usual yttrium content in ores and

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Photometric Determination of the Sum of  
Rare Earth Elements in Ores and Rocks

SOV/75-14-1-9/52

rocks ( $<40\%$ ) increases the determination results by no more than 5 - 6%. By the aid of the method elaborated as much as 8 - 10 analyses may be carried out within 8 - 10 hours. There are 2 figures, 5 tables, and 7 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy institut mineral'nogo syr'ya, Moskva  
(All-Union Institute of Mineral raw Materials, Moscow)

SUBMITTED: October 12, 1957

Card 3/3



ZAYKOVSKIY, F.V.; BASHMAKOVA, V.S.

Isolating rare earth elements from minerals. Zhur.anal.khim. 15  
no.2:166-169. Mar-Apr '60. (MIRA 13:7)  
(Rare earths)

TRUKHANOV, V.A.; BASHMAKOVA, Ye.G.; FIDOSENKO, H.M.

Reconstruction of an open-hearth furnace using accelerated  
production-line methods. Prom. stroi. 38 no. 12:8-14 '60.

(Open-hearth furnaces)

(MIRA 13:12)

BOBRIYEVICH, A.F.; ILUPIN, I.P.; KOZLOV, I.T.; LEBEDEVA, L.I.;  
PANKRATOV, A.A.; SMIRNOV, G.I.; KHAR'KIV, A.D.;  
SOBOLEV, V.S., red.; BASHMAKOVA, Z.I., ved. red.

[Petrography and mineralogy of kimberlite rocks in  
Yakutia] Petrografiia i mineralogiia kimberlitovykh po-  
rod Iakutii. [By] A.F.Bobrievich i dr. Moskva, Nedra,  
1964. 189 p. (MIRA 18:1)

KASPIN, Lev Abramovich; SMIRNOV, Boris Konstantinovich; GADASHEVICH,  
Anna Mikhaylovna; PERNYATIN, Aleksandr Zinov'yevich; BASHMINSKIY,  
S.V., Petsenzent; GOBERMAN, M.D., spets. red.; SOSNOVSKAYA, G.I.,  
red.; BEREZOVSKIY, N.I., tekhn. red.

[Industrial norms, wage rates, and specifications for construction  
and assembly work; general construction operations] Proizvodstven-  
nye normy, rastsenki i pravila na stroitel'no-montazhnye raboty;  
obshchestroitel'nye raboty. Izd.5., dop. i ispr. Kiev, Gosstroi-  
izdat USSR, 1961. 1025 p. (MIRA 15:7)  
(Building—Handbooks, manuals, etc.)

GLUZMAN, M.Kh.; BASHURA, G.S.

Consistency of ointments and its determination. Report No.1.  
Apt. delo 13 no.3:9-14 My-Je '64. (MIRA 18:3)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy  
institut.

"APPROVED FOR RELEASE: 06/06/2000

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**APPROVED FOR RELEASE: 06/06/2000**

**CIA-RDP86-00513R000203820018-7"**

GUSEV, V.F.; STUPNIKOV, A.A.; BASHMURIN, A.F.; MOTRICH, T.A.; VIL'NER, E.A.

Response to our opponents. Veterinariia 41 no.12:70-72 D '64.  
(MIRA 18:9)

1. Leningradskiy nauchno-issledovatel'skiy veterinarnyy institut.



PROTASOV, A.I., dotsent; SINSV, A.V., prof.; SMIRNOV, A.M., dotsent;  
 BAZHENOV, A.N., dotsent; VIL'NER, A.M., prof.; BASHMURIN, A.F.,  
 dotsent; SHAKALOV, K.I., prof.; VELLER, A.A., prof.; NIKANOROV,  
 V.A., prof.; FEDOTOV, V.P., dotsent; KUZNETSOV, G.S., prof.;  
 BOCHAROV, I.A., prof.; SHCHERBATYKH, P.Ya., prof.; TSION, R.A.,  
 prof.; GRIBANOVSKAYA, Ye.Ya., dotsent; ADAMANIS, V.F., assistant;  
 KOLABSKIY, N.A., dotsent; MITSKEVICH, V.Yu., dotsent; GUSEVA, N.V.,  
 dotsent; MYSHKIN, P.P., dotsent; GUBAREVICH, Ya.G., prof.;  
 FEDOTOV, B.N., prof.; DOBIN, M.A., dotsent; SIROTKIN, V.A., prof.  
 [deceased]; KUZ'MIN, V.V., prof.; YEVDOKIMOV, P.D., prof.; POLYAKOV,  
 A.A., prof.; POLYAKOV, P.Ya., red.; BARANOVA, L.G., tekhn.red.

[Concise handbook for the veterinarian] Kratkii spravochnik veteri-  
 narnogo vracha. Leningrad, Gos.izd-vo sel'khoz.lit-ry, 1960. 624 p.  
 (MIRA 13:12)

(Veterinary medicine)

...  
... Veterinari 39 no. 7:84-86 J1 162.  
(MIRA 18:1)  
1. Leningradskiy nauchno-issledovatel'skiy veterinarnyy institut.

BELOV, Mikhail Ivanovich, doktor istor.nauk, starshiy nauchnyy sotrudnik;  
Prinimela uchastiye BASHMURINA, N.I., mladshiy nauchnyy sotrudnik.  
GAKKEL', Ya.Ya., prof., doktor geograf.nauk, red.; CHERNENKO, M.B.,  
red.; FRISHMAN, Z.S., red.izd-va; KOTLYAKOVA, O.I., tekhn.red.

[History of the discovery and development of the northern route]  
Istoriia otkrytiia i osvoeniia Severnogo morskogo puti. Leningrad,  
Izd-vo "Morskoi transport." Vol.3. [Soviet arctic navigation]  
Sovetskoe arkticheskoe moreplavanie, 1917-1932 g.g. Pod red. I.A.IA.  
Gakkelia i M.B.Chernenko. 1959. 509 p.  
(MIRA 13:4)

1. Leningrad. Arkticheskii nauchno-issledovatel'skiy institut.
2. Arkticheskii i antarkticheskii nauchno-issledovatel'skiy institut (for Belov).

(Russia, Northern--Discovery and exploration)

BASHNIN, L.N.; BELINKIN, A.A.; BUKANOV, V.A.; KAULIN, V.A.; ZOTIKOV, S.L.

New technology in the manufacture of tubular form components  
by means of high-frequency heating. Med.prom. 14 no.3:50-52  
Mr '60. (MIRA 13:6)

1. Mediko-instrumental'nyy zavod "Krasnogvardeyets".  
(MEDICAL INSTRUMENTS AND APPARATUS)

BELINKIN, Arnol'd Abramovich; BASHNIN, Lev Nikolayevich; IL'IN, V.A.,  
red.; GRIGOR'YEVA, I.S., red. izd-va; BELOGUROVA, I.A.,  
tekhn. red.

[Mechanization of ornamental grinding and polishing operations]  
Mekhanizatsiia dekorativnykh shlifoval'no-poliroval'nykh rabot;  
opyt zavoda "Krasnogvardeets." Leningrad, 1962. 30 p.  
(MIRA 15:8)

(Grinding and polishing)

SOV/137-59-1-1823

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 241 (USSR)

AUTHORS: Kidin, I. N., Bashnin, Yu. A.

TITLE: Certain Specific Technological Properties of High-frequency Hardening Associated With the Kinetics of Induction Heating (Nekotoryye tekhnologicheskiye osobennosti vysokochastotnoy zakalki, svyazannyye s kinetikoy induktsionnogo nagreva)

PERIODICAL: V sb.: Prom. primeneniye tokov vysokoy chastoty. Riga, 1957, pp 123-133

ABSTRACT: A report on the general aspects of the kinetics of induction heating (IH) and practical recommendations on procedures for high-frequency hardening (HH) are given. Upon attaining  $t_c$  during IH an inflection point appears on the heating curve which is caused by the decrease and redistribution of the specific power. The basic types of IH kinetics are: Curves with a dip (saddle), a flat top, or an inflection. The phase transformations (PT) proceed in three stages: Nonisothermal in the  $A_1 \rightarrow t_c$  range, isothermal at  $t_c$ , and nonisothermal at  $> t_c$ . In the case of an inflection the isothermal stage is absent. The effect of alloying of steel with Cr, W, and Ni on the

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Certain Specific Technological Properties of High-frequency Hardening (cont.)

results of HH is examined. The hypothesis on the displacement of PT into the area of more elevated temperatures during IH and the necessity of using higher temperatures during HH than during the usual heating procedure is confirmed. A new thermal parameter of the rate of IH in the PT range (above the inflection point on the curve) is proposed. For a group of steels with 1% Cr and 0.42 - 1.01% C diagrams are adduced of the prevailing and permissible IH specifications in the coordinates HH temperature vs. IH rate in the PT region. With an increase in the concentration of C there is an expansion of the temperature range of HH which causes increased hardness. An increase in the IH rate widens the zone of prevailing heating. IH is impractical with an IH rate  $< 50^{\circ}\text{C}/\text{sec}$ . The largest zone of predominant HH performance is observed with IH rates of  $200^{\circ}\text{C}/\text{sec}$ .

L. F.

Card 2/2

BASHNIN, Yu. A., Cand Tech Sci--(disc) "Kinetics of the isothermal transformation of austenite obtained in inductive heating." Mos, 1958. 12 pp, incl cover (Min of Higher Education USSR. Mosc Order of Labor Red Banner Inst of Steel in I.V. Stalin), 120 copies (IL, 49-58, 123)

-42-



**AUTHORS:** Kidin, I. N., Bashnin, Yu. A. SOV/163-58-2-41/46

**TITLE:** The Kinetics of the Isothermal Transformation of Austenite After Induction Heating (Kinetika izotermicheskogo prevrashcheniya austenita posle induktsionnogo nagreva)

**PERIODICAL:** Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 2, pp. 227-233 (USSR)

**ABSTRACT:** In the induction heating phase transformations occur and it therefore is of importance to investigate the kinetics and the mechanism of the isothermal transformation of austenite. Alloyed steel samples of different composition were used as initial materials with the influence of the alloyed component in the austenite transformation having been taken into account. Comparative isothermal investigations of the austenite transformation were carried out with carbon containing steels in the case of induction and furnace heating. The austenite forming in induction heating is less stable than that obtained in furnace heating. The decomposition of austenite takes place six times more rapid in the case of induction heating at a temperature of 500°C than is the case with austenite obtained by furnace

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The Kinetics and the Isothermal Transformation of Austenite After Induction Heating

SOV/163-58-2-41/46

heating. The decomposition of austenite obtained by induction heating within the perlite range represents a pure diffusion process. In induction heating austenite occurs in fine grains, which fact accelerates the destruction process. Besides, the austenite obtained in induction heating is irregular and does not have a uniform chemical composition. The most stable austenite is obtained from eutectic steels. When the carbon content in non-eutectic steels is decreased and the carbon content in hypereutectic steels is increased the rate of austenite decomposition increases. Nickel increases the stability of austenite. When the nickel content is increased and the carbon content remains constant the stability of austenite increases. In the case of a constant nickel content and an increased carbon content the stability of austenite decreases. The decisive factors determining the rate of the decomposition of austenite are first of all the rate of heating within the range of phase transformation, and the temperature of heating. There are 5 figures, 1 table, and 12 references, 12 of which are Soviet.

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The Kinetics and the Isothermal Transformation of Austenite After Induction Heating

SOV/163-58-2-41/46

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: December 6, 1957

Card 3/3

129-58-7-2/17

AUTHORS: Kidin, I. N., Doctor of Technical Sciences, Professor  
and Bashnin, Yu. A., Engineer

TITLE: Kinetics of Isothermal Transformation of <sup>the</sup> Austenite  
of Carbon Steel During Induction Heating (Kinetika  
izotermicheskogo prevrashcheniya austenita uglerodistoy  
stali pri induktsionnom nagreve)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 7,  
pp 10-15 (USSR)

ABSTRACT: In earlier work the authors of this paper (Refs. 3 and 4)  
and other authors (Refs. 5 and 6) have shown that  
austenite forming during induction heating is character-  
ised by a non-uniform chemical composition, the degree  
of which depends on the heating regime and on the nature  
of the heated steel. In this work the authors investigate  
the kinetics and the mechanism of isothermal decomposition  
of the austenite as a function of the composition of the  
steel and the austenisation regime. The chemical  
compositions of the selected steels are entered in  
Table 1, p. 11. The kinetics of the isothermal decomposition  
were studied by the magnetometric method. For comparison  
and for better elucidation of the specific features of  
decomposition of the austenite obtained as a result of

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Kinetics of Isothermal Transformation of <sup>the</sup> Austenite of Carbon Steel During Induction Heating 129-58-7-2/17

induction heating the austenite decomposition was also studied after ordinary heating in the furnace with heating regimes as enumerated in Table 2, p.11. Isothermal transformation diagrams as well as the obtained kinetic curves of austenite decomposition are given. On the basis of the obtained results the following conclusions are arrived at:

- 1) For the investigated grades of steel the austenite has a lower stability in the case of induction heating than in the case of ordinary heating due to the larger non-uniformity of the carbon distribution and the fact that the austenite grains are finer;
- 2) The kinetics of decomposition of the austenite which forms during induction heating is similar to the kinetics pertaining to ordinary heating for the pearlitic temperature range. There is no justification for assuming that the mechanism differs from that of decomposition of austenite obtained in the case of slow heating;

Card 2/3 3) Transformation of the austenite obtained during

Kinetics of Isothermal Transformation of <sup>the</sup> Austenite of Carbon  
Steel During Induction Heating 129-58-7-2/17

induction heating in the intermediate range begins according to the martensitic kinetics with subsequent superposition of the diffusion process of carbon redistribution in the austenite. This conclusion can be made by considering the transformation after induction heating as being of a two-stage nature;

4) A decisive factor determining the characteristic of decomposition of austenite obtained during induction heating is the regime of austenisation: the speed of heating and the range of phase transformations and the heating temperature, i.e. the magnitudes determining the uniformity of the composition of the austenite and its grain size.

There are 3 figures, 2 tables and 9 references, 8 of which are Soviet, 1 English.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

Card 3/3

BAS H NIN, YU. A.

PHASE I BOOK REPLICATION NOV/7182

Moscow. Institut stali

Proizvodstvo i obrabotka stali i splavov (Production and Treatment of Steel and Alloys) Moscow, Metallurgizdat, 1960. 462 p. (Series: Iste Shornik, 39) 2,100 copies printed.

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

Purpose: This book is intended for technical personnel in industry, scientific institutions and schools of higher education, dealing with open-hearth and electric-furnace steelmaking, metal rolling, physical metallurgy, metallography, and heat treatment. It may Card 1/10

Also be used by students specializing in these fields.

Contents: The book contains results of theoretical and experimental investigations of metallurgical and heat-engineering processes in open-hearth and electric furnaces. Data are included on the following: desulfurizing of pig iron outside the blast furnace, interaction of oxides of the carbide-forming metals with solid carbon, the change of content of gases in the bath of the open-hearth furnace in various periods of melting, investigation of the electric melting of steel, etc. Other articles deal with the homogeneity of deformation in rolling, the study of the influence of the rolling process on the properties of the rolled metal, the influence of the rolling process on the properties of the rolled metal, the influence of the rolling process on the properties of the rolled metal, etc. References accompany most of the articles. There are 207 references, both Soviet and non-Soviet.

Card 2/10

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

267

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

264

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

257

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

305

Ed.: Yu. A. Doroz; Ed. of Publishing House: S. L. Zinger; Tech. Ed.: M. R. Klement; Editorial Council of the Institute: M. A. Glinov, Professor, Doctor of Technical Sciences; V. P. Yelutin, Professor, Doctor of Technical Sciences; A. A. Zhukovitskiy, Professor, Doctor of Chemical Sciences; I. M. Kildin, Professor, Doctor of Technical Sciences; B. D. Lyavitskiy, Professor, Doctor of Technical Sciences; A. P. Ignatyev, Professor, Doctor of Technical Sciences; I. M. Pavlov, Corresponding Member, Doctor of Technical Sciences; and A. N. Podvayner, Professor, Doctor of Technical Sciences.

Card 7/10

18.7500

77702

SOV/148-60-1-25/34

AUTHORS: Kidin, I. N., Bashnin, Yu. A.

TITLE: Isothermal Austenite Transformation at Induction Heating of Tool Steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, Nr 1, pp 147-151 (USSR)

ABSTRACT: The authors, assisted by Eng. L. F. Kharitonova, studied the effect of conventional or retarded furnace heating and of optimum induction heating on the kinetics of austenite decomposition in overcooled state in three different steels (Table A). The transformation curves for steel KhG are illustrated in Fig. 2; the curves for steels 9KhS and KhVG preserve about the same form, but are shifted to the left and right, respectively. All three steels demonstrated that induction heating shifts the curves of both the formation and decomposition of austenite to the left relative to the curves for furnace heating. The respective figures reveal that induction heating accelerates austenite decomposition by 2.5 to 68 times depending on the heating temperature, heating rates, and steel

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Isothermal Austenite Transformation at  
Induction Heating of Tool Steel

77702  
SOV/148-60-1-25/34

composition. The lesser stability of the austenite formed on induction heating is believed to be the result of the higher heating rates during induction heating,

Table A. Chemical composition of steels and conditions of austenization. (A) Designation of steel; (B) chemical composition (%); (C) condition of austenization; (D) conventional heating; (E) induction heating; ( $t_A$ ) heating temperature ( $^{\circ}\text{C}$ ); ( $v_{\phi}$ ) heating rates ( $^{\circ}\text{C}/\text{sec}$ ).

A	B								C	
	C	Cr	Ni	W	Mn	Si	S	P	D.	E
9KhS	0,88	1,06	0,10	—	0,52	1,38	0,010	0,016	$t_A = 900^{\circ}$	$v_{\phi} = 230$ $t_A = 950^{\circ}$
KhG	1,43	1,46	0,11	—	0,58	0,29	0,008	0,020	$t_A = 875^{\circ}$	$v_{\phi} = 230$ $t_A = 925^{\circ}$
KhVG	0,95	0,98	0,10	1,60	1,02	0,28	0,007	0,017	$t_A = 870^{\circ}$	$v_{\phi} = 230$ $t_A = 920^{\circ}$

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77702

SOV/148-60-1-25/34

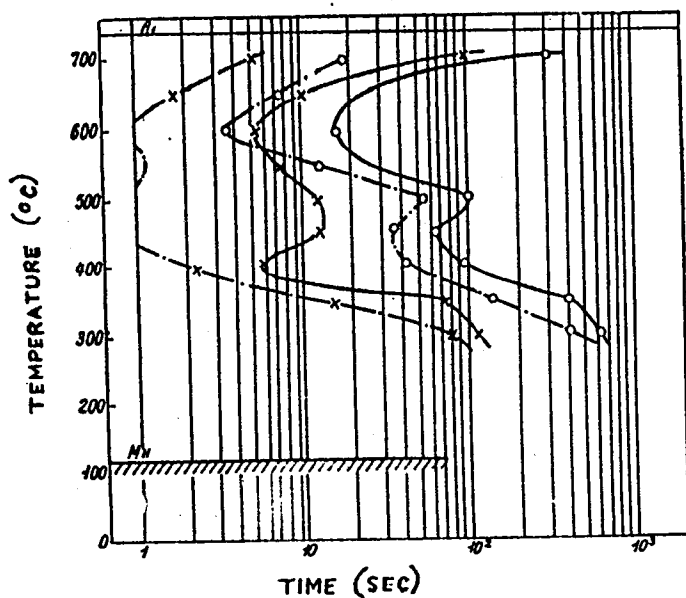


Fig. 2. Diagram showing isothermal austenite transformation in steel KhG. -.-.-. Induction heating,  $v_{\phi} = 230^{\circ} \text{C/sec}$ ,  $t_A = 92^{\circ} \text{C}$ ; ——— conventional heating,  $t_A = 875^{\circ} \text{C}$ .

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Isothermal Austenite Transformation at  
Induction Heating of Tool Steel

77702  
SOV/148-60-1-25/34

due to which austenite becomes finer-grained, richer in residual carbide, and with carbon and other admixtures less regularly distributed. Each of these factors contributes in one way or another to a more rapid decomposition of austenite in overcooled state, especially above the pearlite stage. The presence of more than one carbide accelerates austenite decomposition still further. The products of austenite decomposition on induction heating proved to be softer than those produced on furnace heating. This difference is especially pronounced at temperatures from 450 to 550° C, at which the decomposition products become harder because of structure alterations at the turn from pearlite to a transitional stage. Change of the conditions under which austenization takes place can permit one to vary the hardenability of these steels. There are 4 figures; 1 table; and 5 Soviet references.

ASSOCIATION: Moscow Steel Institute (Moskovskiy institut stali)

SUBMITTED: January 12, 1959 Card 4/4

20281

S/148/60/000/009/018/025  
A161/A030

18.7100

1413 1045

AUTHORS: Bashnin, Yu.A., and Kidin, I.N.

TITLE: The effect of induction heating on the kinetics of isothermal austenite transformation in chromium steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 9, 1960, 132-139

TEXT: Induction heating of steel alloyed with carbide-forming component not only gives finer grain and fine austenite structure but also reduces the dissolving of carbides comparing with conventional furnace heating (Ref.1,2); this must be reflected in the kinetics of isothermal austenite transformation. The purpose of investigation was to study the effect of the carbide-forming element on the stability of austenite obtained by induction heating. Four chromium steel grades chosen (with Cr content between 1.06 and 5.03%) were melted in a small induction furnace, and annealed for grainy pearlite (initial structure for investigation). The transformation kinetics were watched with an Akulov anisometer adapted for induction heating; details of method were described in (Ref.4) (I.N.Kidin, Yu.A.Bashnin)

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S/148/60/000/009/018/025  
A161/A030

The effect of induction heating ...

and K.S.Lechikevich. "Sb. truda MIS", XXXIX, 1960). A 100 kw, 350,000 cycles/sec tube generator was used for heating, with a photoelectric pyrometer. The transformation after slow heating in a furnace was also studied for comparison. The isothermic austenite transformation curves recorded in induction and common heating are given (Fig.1-4). Addition of Cr produced two sharply expressed stable austenite zones with a transition zone in between, regardless of the heating method. Contrary to the effect in carbon steel (Ref.5) austenite was less stable in induction heated steel than in furnace heated, and the temperature effect was different. Undissolved carbides had a considerable effect, and the composition of austenite varied: in steel with 0.56% C and 1.06% Cr heated with 200°C/sec to 950° the C content in martensite, and hence in austenite prior to quenching, was 0.37%, compared with 0.56% in common heating. Undissolved carbides obstruct the austenite grain growth decreasing its stability. Photomicrographs (Fig.5) show much smaller grain size after induction heating than after common. Fine-grain austenite must decompose in the pearlite phase faster than coarse-grained, and this can be seen in diagrams (Fig.1-4). For instance, decomposition of austenite in steel 0.84% C and 1.07% Cr

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The effect of induction heating ...

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S/148/60/000/009/018/025  
A161/A030

at 600°C starts after 1 sec during induction heating, and after 28 sec in common; at 650° the respective time is 5 and 12 sec. For steel with 0.56% C and 1.06% Cr this time is 1 sec and 36 sec at 600°, and 1.5 and 14 sec at 650°C. The same was observed at other temperatures in the pearlite range. In the transition zone the stability of austenite dropped more, which may be explained by the presence of ready centers of the new phase formation. In 300-500°C a continuous drop of hardness was stated with rising temperature, and in induction-heated steel the drop was to a lower level. Increase of Cr content from 1.06 to 4.96% at C content of 0.56 and 0.89 lead to some increase of stability of supercooled austenite regardless of the austenization method, but reduced stability of austenite formed in speeded up heating was more expressed at high Cr content. Time to start decomposition of austenite in steel with 0.58 C and 5.03% Cr at 600°C was 6 sec (in heating with 200°C/sec to 980°), and in common heating 650 sec. In the pearlitic transformation range the temperature of minimum austenite stability dropped more than in common heating. Conclusions: 1) Austenite of chromium steel formed in induction heating is less stable at subcritical temperatures than austenite formed in furnace heating, and the stability varies with transformation temperature and steel composition. 2) The kinetic of transforma-

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4

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S/148/60/000/009/018/025  
A161/A030

The effect of induction heating ...

tion is determined - (apart from the chemical composition) by the mode of heating. The heating mode in induction heating has more influence in the initial stages of supercooled austenite decomposition. 3) The minimum austenite stability temperature in induction heating dropped, owing to lower Cr content in austenite. 4) Hardening of the austenite decomposition products in transformation from the pearlite into the transition range was absent. This is due to reduced and uneven Cr distribution in austenite. 5) The application of induction heating drastically reduces the stability of supercooled austenite in chromium steel in the transition range. There are 7 figures and 6 Soviet-bloc references. X

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: 11 April 1960

Card 4/4

KIDIN, I.N., doktor tekhn.nauk; BASHNIN, Yu.A., kand.tekhn.nauk;  
LECHIKOVICH, K.S., inzh.

Kinetics of the isothermal transformation of austenite in  
roller bearing steel prepared with use of induction heating.  
Sbor.Inst.stali no.39:284-296 '60. (MIRA 13:7)

1. Kafedra metallovedeniya i termicheskoy obrabotki Moskovskogo  
ordena Trudovogo Krasnogo Znameni instituta stali im. I.V.  
Stalina.

(Steel--Metallography) (Induction heating)



S/148/61/000/011/012/018  
E111/E480

AUTHORS: Bashnin, Yu.A., Kidin, I.N.

TITLE: The effect of induction-heating conditions on the kinetics of the isothermal transformation of austenite in type 40X (40Kh) and 40XM (40KhN) steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no.11, 1961, 143-151

TEXT: Heating with high-frequency currents is widely used in heat treatment. To find whether induction heating can be used for isothermal treatment of steel, the kinetics and mechanism of the decomposition of austenite obtained with rapid heating must be studied. The authors have previously shown that with many steels such austenite is less stable and impairs the hardenability of the steel. For the present work, the two steels most widely used in heat treatment with induction heating were selected. Their compositions are - 40Kh steel: 0.38% C, 0.90% Cr, 0.13% Ni, 0.31% Si, 0.76% Mn, 0.023% S, 0.037% P; and 40KhN: 0.40% C, 0.67% Cr, 1.33% Ni, 0.24% Si, 0.67% Mn, 0.022% S, 0.014% P. The kinetics of the isothermal transformation of supercooled austenite were studied magnetically, with an Akulov anisometer Card 1/4

The effect of induction-heating ...

S/148/61/000/011/012/018  
E111/E480

adapted for induction-heating conditions. A 100 kW, 350000 cps generator was used. Details of the experimental methods have been described previously (Ref.3: I.N.Kidin, Yu.A.Bashnin, K.S.Lechikevich. Sbornik trudov Moskovskogo instituta stali. XXXIX, 1960). The experimental conditions permitted the study of the influence of austenizing temperature with ordinary and induction heating, and of steel composition on the stability of supercooled austenite and on the mechanical properties of the decomposition products. L.A.Shmeleva participated in the experimental work. It was found that with ordinary heating of 40Kh steel, the stability of supercooled austenite was increased with increasing temperature from 850 to 950°C. The same holds for other temperatures in the pearlitic region. This is due to the increasing austenite grain size and carbon and chromium concentration produced by increased temperatures in the austenitic range. The effect is particularly pronounced at 300°C. The introduction of nickel (type 40KhN steel) increases stability in the pearlite and intermediate region; increase in temperature from 820 to 950°C increases the stability of the austenite. As in Card 2/4

The effect of induction-heating ...

S/148/61/000/011/012/018  
E111/E480

40Kh steel, there is a marked drop in hardness of the decomposition products at 500°C. When induction heating is used, giving heating rates of up to 120 and 225°C/sec, the stability of supercooled austenite falls greatly in both steels (e.g. a fourfold and sixfold increase in decomposition rate at 650°C for 40Kh steel for heating rates of 120 and 225°C/sec, respectively). Reduced stability in the pearlite region is due to the lower carbon and chromium concentrations in the austenite, their non-uniform distribution and the smaller austenite grain size. Undissolved carbide is an important factor in the acceleration of austenite decomposition with the conditions used. Changes in austenite fine structure on indirect heating, caused by a change in transformation mechanism, also contributes to the higher decomposition rate as compared with that on ordinary heating. The higher the rate of induction heating to the constant temperature, the more heterogeneous (as regards carbon and alloying elements) is the austenite formed; consequently, the martensite-transformation range is extended in both directions when induction heating is used. The low austenite stability observed at 300°C is attributed to the

Card 3/4

The effect of induction-heating ...

S/148/61/000/011/012/018  
E111/E480

presence of microvolumes with carbon contents that determine the starting temperature for the martensite transformation. From the effects of the isothermal holding temperature and the conditions of heating in the austenitic range on the hardness of decomposition products it is evident that the higher the heating rate to the constant temperature, the less distinct the transition from the pearlitic to the intermediate region: at a heating rate of 225°C/sec, the hardness drop in nickel steel at 500°C, characteristic of slower rates, is absent and there is only a retardation in the hardness increase. There are 6 figures, 1 table and 7 Soviet-bloc references.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: June 6, 1961

Card 4/4

BASHNIN, Yu.A.; KIDIN, I.N.; KAL'NER, V.D.

Effect of induction heating on the mechanical properties of undercooled austenite decomposition products. Izv. vys. ucheb. zav.; chern. met. 5 no.7:158-164 '62. (MIRA 15:8)

1. Moskovskiy institut stali i splavov.  
(Steel, Stainless--Metallography) (Induction hardening)

L 19697-65

EWI(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b)

ASD(m)-3/AFETR/IJP(c)

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CIA-RDP86-00513R000203820018-7"

ACC NR: AP7003848

(N)

SOURCE CODE: UR/0122/67/000/001/0059/0061

AUTHORS: Paisov, I. V. (Doctor of technical sciences, Professor); Bashnin, Yu. A. (Candidate of technical sciences, Docent); Tsurkov, V. N. (Engineer); Maslova, Yu. N. (Engineer); Kats, I. Ya. (Engineer); Bocharov, V. A.; Maksyuta, Z. I.

ORG: none

TITLE: Improving the mechanical properties of large forgings by changing the heat treatment parameters

SOURCE: Vestnik mashinostroyeniya, no. 1, 1967, 59-61

TOPIC TAGS: steel forging, metal heat treatment, steel, steel property / 50KhN steel, 60KhN steel, 55Kh steel, 60KhG steel

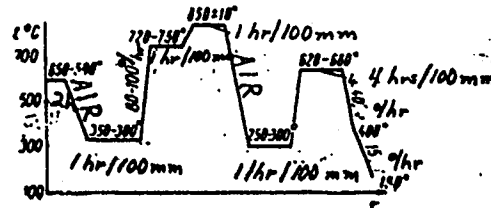
ABSTRACT: Factory tests on 32-ton, 1300-mm diameter forgings of 60KhN steel showed that the prescribed factory heat treatment for large forgings of 50KhN, 60KhN, 55Kh, and 60KhG steels gave mechanical properties which were below the norm ( $\sigma_T = 50.0 \text{ kg/mm}^2$ ,  $\sigma_b = 80.0 \text{ kg/mm}^2$ ,  $\delta = 8.0\%$ ,  $\psi = 33.0\%$ ,  $a_n = 3.0 \text{ kgm/cm}^2$  is the norm). The factory heat treatment (see Fig. 1) was modified by the authors who replaced the isothermal heating at 720C by heating to 950C for 2-3 hours with subsequent cooling to 860C and holding at that temperature for 1 hr/100-mm cross section. Thermocouples were embedded in the test forgings at 50 mm, at 1/3 R from the surface, and at the center. It was

Cord 1/2

UDC: 621.78:621.73.002.23

ACC NR: AP7003848

Fig. 1. Factory heat treatment of large forgings



found that the modified heat treatment gave more desirable temperature profiles and resulted in improved mechanical properties (except for the impact strength) of the forgings. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 13/ SUM DATE: none

Cord 2/2

PAISOI, I.V.; BASHNIN, Yu.A.; TOMSINSKIY, V.S.

Effect of heat treatment on the properties of alloyed tool  
steels. Stan. i instr. 35 no.10:32-33 0 '64. (MIRA 17:12)

L 23791-66 EWP(e)/ENT(m) WH

ACC NR: AP6007260

(A)

UR/0363/66/002/002/0363/0375

AUTHOR: Boganov, A.G.; Rudenko, V.S.; Bashnina, G.L.

ORG: Institute of Silicate Chemistry im. I.V. Grebenshchikov, AN SSSR  
(Institut khimii silikatov AN SSSR)

TITLE: The laws governing the crystallization and nature of quartz glass

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v.2, no.2, 1966,  
363-375

TOPIC TAGS: glass property, crystallization, quartz glass, glass, crystalli-  
zation

ABSTRACT: A study was made of the process of crystallization of industrial domestic quartz glass.<sup>15</sup> The crystallization took place at a temperature of 1300°C in an air atmosphere. The heating time usually did not exceed 10 to 15 hours. It was established that the crystallization takes place from the surface. Microphotos of various samples are given. Crystallization in a vacuum not only slows down the process, but takes place with a holding time of 30 to 50 hours and a temperature of 1300°C. Analysis of the experimental data, as well as later foreign experimental results, leads to the conclusion that quartz glass is always a non-stoichiometric product. This fact, plus the strictly covalent nature of the bonds explains the nature of the glassy state of silicon dioxide. Orig.

Card 1/2

UDC: 666.1:542.65

L 23791-66

ACC NR: AP6007260

art. has: 7 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 01Jul65/ ORIG REF: 002/ OTH REF: 020

Cord 2/2 H

YAGUDAYEV, M.D. [deceased]; BASHNYAK, A.Ya.; NECHAYEV, Yu.Ye.; MAVASHEV, Yu.Z.;  
RUDSHTEYN, V.L.

A two-meter high-temperature solar furnace. Geliotekhnika no.1:  
31-38 '65. (MIRA 18:5)

1. Fiziko-tekhnicheskiiy institut AN UzSSR.



"APPROVED FOR RELEASE: 06/06/2000

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APPROVED FOR RELEASE: 06/06/2000

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ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physics and Engineering)

"APPROVED FOR RELEASE: 06/06/2000

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APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000203820018-7"

BASHSHALIYEV, A.A.

BASHSHALIYEV, A.A.; ABDULLAYEV, G.B.

Effect of temperature on the heat conductivity of selenium containing admixtures of bromine. Dokl. AN Azerb. SSR 13 no.8:831-836 '57.  
(MIRA 10:9)

1. Institut fiziki i matematiki Azerbaydzhanskoy SSR.  
(Heat--Conduction) (Selenium) (Bromine)

**Bashshaliyev, A. A.** 57-9-8/40  
**AUTHORS** Abdullayev, G.B., Bashshaliyev, A.A.,  
**TITLE** The Influence of Bromine Admixtures on the Heat Conductivity of Selenium.  
(Vliyaniye primesey bromina na teploprovodnost' selena.-Russian)  
**PERIODICAL** Zhurnal Tekhn.Fiz., 1957, Vol 27, Nr 9, pp 1971 - 1975 (U.S.S.R.)  
**ABSTRACT** First, the experimental plant and the order in which measurements were carried out are described, after which the results obtained by investigations are dealt with. It is shown that pure amorphous selenium possesses the highest degree of conductivity, which amounts to  $3,08 \cdot 10^{-3}$  cal/degree.cm sec. If the bromine content is increased up to 0,065%, it is reduced down to the minimum ( $1,37 \cdot 10^{-3}$  cal/degree.cm sec.). A further increase of the concentration of the bromine leads to an increase of heat conductivity, which approaches the original value without, however, attaining it ( $2,424 \cdot 10^{-3}$  cal/degree.cm sec.) The same governing rules were found to prevail in crystalline selenium with different bromine concentration. It is shown that the modification of heat conductivity in dependence of the bromine content is determined also in crystallization mainly by the conditions of dispersion for the phonons. The admixtures introduced into selenium diminish the free length of path of the phonons and thus also reduce the share of phonons in heat conductivity. Up to a content of 0,065% bromine in selenium reduced the concentration of the additional centers for the dispersion of phonons and reduces the heat conductivity of selenium. The increase of heat conductivity in the case of a bromine content of more than 0,065% is explained by the

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The Influence of Bromine Admixtures on the Heat Con- 57-9-8/40  
ductivity of Selenium.

fact, that in the case of great bromine concentrations, the admixture density causes the formation of non-active bromine molecules. On this occasion the number of dispersion centers is reduced, which leads to an increase of heat conductivity. The fact that the amount of heat conductivity is always less than in the case of pure selenium proves that the neutral bromine molecules which are formed produce additional dispersion centers of the phonons. There are 3 figures and 10 Slavic references.

ASSOCIATION Physical Institute AN Azerbaidzhan SSR  
(Institut fiziki AN AzSSR, Baku)  
SUBMITTED September 10, 1956  
AVAILABLE Library of Congress.  
Card 2/2

BASHSHALIYEV, A.A., Cand Phys-Math Sci--(diss) "Effect of bromine  
admixture<sup>up</sup> on the physical properties of selenium." Baku, 1958. 13 pp  
(Min of Education AzSSR. Azerbaydzhan State Pedag<sup>inst</sup> Inst in V.I. Lenin),  
100 copies (KL,30-58,121)

-5-



24.7700

65995  
SOV/81-59-8-26296

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 8, pp 35 - 36 (USSR)

AUTHOR: Bashshaliyev, A.A.

TITLE: The Effect of Bromine Admixtures on Some Physical Properties of Selenium

PERIODICAL: Tr. In-ta fiz. i matem. AS AzerbSSR, 1958, Vol 9, pp 42 - 59 (Azerb. summary)

ABSTRACT: The effect of a Br admixture on the crystallization temperature  $T$  (cr.), the electric conductivity  $\sigma$ , the thermal emf  $E$ , the heat-conductivity  $\lambda$ , the optical properties of Se and the electrochemical processes near the electrode, have been studied. The presence of Br in Se decreases  $T$ (cr) at low temperatures ( $< 80^\circ\text{C}$ ), and at  $190^\circ\text{C}$  the degree of crystallization does not depend on the content of the admixture. At the change of the Br concentration  $\sigma$  passes through a maximum at 0.130%. Its temperature dependence obeys the exponential law with the activation energy  $\Delta E$  which decreases at the increase in the Br concentration up to 0.130% and then increases. It is assumed that the dependence indicated characterizes mainly the  $\sigma$  change of the intercrystalline interlayers. The sign of  $E$  for pure Se and Se with admixture corresponds to the hole conductivity. With an in-

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65995

SOV/81-59-8-26296

The Effect of Bromine Admixtures on Some Physical Properties of Selenium

crease in the temperature and the Br concentration  $E$  decreases. The maximum concentrations of the holes calculated from the  $E$  values at room temperature are  $\sim 10^{15} \text{ cm}^{-3}$  for pure Se and  $\sim 10^{17} \text{ cm}^{-3}$  for Se with admixture. The corresponding mobility values of the holes are  $\sim 10^{-2}$  and  $10^{-1} \text{ cm}^2 \text{ v}^{-1} \text{ sec}^{-1}$ .  $\lambda$  which is for pure Se  $(3 - 7) \cdot 10^{-3} \text{ cal degree}^{-1} \text{ cm}^{-1} \text{ sec}^{-1}$  (for amorphous and crystalline Se, respectively) decreases with an increase in the Br concentration up to 0.065% and then increases without attaining the initial values. The minimum of the  $\lambda$  curve nearly corresponds to the  $\sigma$  maximum. This is explained by the increase in the heat scattering of the phonons at low concentrations of the admixture and by the formation of inactive molecules at high concentrations as a result of the recombination of atoms. Under the action of water on Se rectifiers the thin surface layer of  $\text{SeO}_2$ , formed during crystallization, forms  $\text{H}_2\text{SeO}_3$  and in the presence of Br also HBr. A polarization current is observed in both directions. The boundary of natural absorption of pure Se is around  $640 \text{ m}\mu$ . An increase in the Br concentration does not cause an essential change in the longwave boundary of the natural absorption. The width of the forbidden zone for amorphous Se is 2.13 ev, for crystalline Se 1.9 ev.

V. Ostroborodova

Card 2/2

81503

SOV/137-59-5-10663

24.7600  
Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 172 (USSR)

AUTHOR: Bashshaliyev, A.A.

TITLE: On the Effect of Bromine Admixtures on the Heat Conductivity of  
Amorphous and Crystalline Selenium 21

PERIODICAL: Tr. In-ta fiz. i matem. AS AzerbSSR, 1958, Vol 9, pp 60 - 69  
(Azerb. résumé)

ABSTRACT: The author investigated the effect of Br admixtures (0.008 - 0.5%) on the coefficient of heat conductivity  $\lambda$  of amorphous and crystalline Se at 27.5°C by the method of stationary conditions (with subsequent calculation of  $\lambda$  by the Fourier equation). The author found a qualitatively identical dependence of  $\lambda$  on the Br concentration for amorphous and crystalline Se. The minimum of  $\lambda$  was observed at a 0.065% Br content. Then, it increased slightly without attaining the value for pure Se. The values of  $\lambda$  for crystalline Se are 2 - 3 times higher than the corresponding values for amorphous Se. The obtained dependence ✓

Card 1/2

81503

SOV/137-59-5-10663

On the Effect of Bromine Admixtures on the Heat Conductivity of Amorphous and Crystalline Selenium

of  $\lambda$  on the Br concentration is explained by changes in the cross-section of the phonon scattering with changes in the Br concentration. It is assumed that a Br admixture of up to 0.065% entails the formation of interstitial solid solutions and that higher Br concentrations cause the formation of substitutional solid solutions. ✓

A.L.

Card 2/2

BA SH SHA LIYEV, A. A.

24(\*) PHASE I BOOK EXPLORATION SOV/3140

Academy of Sciences USSR, Institute of Physics

Photoelectric and optical phenomena in semiconductors and photoconductive materials. This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

Additional Sponsoring Agency: Academy of Sciences USSR, Presidium. Komissiya po poluprovodnikam.

Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk; Reep. Ed.: V. Ye. Lashmarov, Academician, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors. A wide scope of problems in semiconductor physics and technology are considered: photoconductivity, photoelectromotive forces, optical properties, photoelectric cells and photoresistors, the actions of hard and corpuscular radiations, the properties of thin films and composite semiconductor systems, the properties of photoconductive materials, and the properties of photoconductive materials. The articles are written by E. I. Zhurav, O. V. Zaitsev, K. B. Tolstov, A. P. Lushchenko, and M. K. Magyris. References and discussion follow each article.

Photoelectric and Optical Phenomena (Cont.)	SOV/3140
Yerofeyev, V. G. and I. M. Kurbatov. Recording the Photoconductivity of Lead Sulfide According to the Absorption of Microwaves	213
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Kisitsa, M. P., V. M. Kuznetsov, and V. G. Tuzlykh. Optical Properties of Thin Films of Some Semiconductors	227
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Zurabov, A. M. Electron Exchange of Semiconductors With Adsorbed Molecules	248

41074

S/058/62/000/008/084/134  
A062/A101

24.3959

AUTHORS: Khalilov, A. Kh., Aliyev, M. I., Bashshaliyev, A. A., Aliyev, G.,  
Salayev, E.

TITLE: Investigation of the optical properties of selenium with iodine,  
bromine and chlorine admixtures

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 30, abstract 8E222  
(In collection: "Fotoelektr. i optich. yavleniya v poluprovodnikakh",  
Kiyev, AN USSR, 1959, 233 - 236)

TEXT: An investigation was made of the effect of I, Br, Cl admixtures on  
the optical properties of thin Se layers. Se layers 3 - 5  $\mu$  thick with a deter-  
mined percent of admixture composition were obtained by evaporation of correspond-  
ing mixtures in vacuo. The absorption, transmission and reflection spectra were  
obtained. From the position of the edge of the proper absorption for amorphous  
and crystalline selenium the width of the forbidden zone (1.94 and 1.83 eV, res-  
pectively) was calculated. It has been shown that the presence of I, Br and Cl  
admixtures (up to 15%) has almost no effect on the position of the long wave

Card 1/2

Investigation of the...

S/058/62/000/008/084/134  
A062/A101

limit of the proper absorption and on the aspect of the reflection and transmission spectra.

O. Shustova

[Abstracter's note: Complete translation]

Card 2/2

BASHSHALIYEV, A.A.

Effect of halogens on the thermal conductivity of selenium:  
Fiz. tver. tela 1 no.2:348-350 F '59. (MIRA 12:6)

1. Institut fiziki i matematiki AN Azerb. SSR.  
(Selenium--Thermal properties)



MOVLANOV, Sh.; ABDULLAYEV, G.B.; BASHSHALIYEV, A.; KULIYEV, A.; KERIMOV, I.

Some properties of antimony telluride single crystals. Dokl. An.  
Azerb. SSR 17 no.5:375-379 '61. (MIRA 14:6)

1. Institut fiziki, sektor fiziki i matematiki Akademii nauk  
Tadzhikskoy SSR.  
(Antimony telluride)

ABDULLAYEV, G.B.; BASHSHALIYEV, A.A.; ALIYEV, S.A.

Heat conductivity of solid solutions  $Sb_2S_3$ - $Sb_2Se_3$ . Dokl.  
AN Azerb. SSR 17 no.10:877-879 '61. (MIRA 14:12)

1. Institut fiziki AN AzSSR.  
(Solutions, Solid—Thermal properties)  
(Antimony sulfides)  
(Antimony selenide)

BASHMALIYEV

A. A.

Some properties of binary semiconducting compounds and generalized moment. M. S. Saidov (10 minutes).

Experimental investigation of the energetic structure of zones of semiconducting compounds. V. V. Sobolev (10 minutes).

Investigation of the thermal conductivity of doped gallium arsenide. M. I. Aliev, G. G. Achmedli.

Concerning the thermal conductivity of solid solutions of  $Sb_2S_3$ - $Sb_2Se_3$ . G. B. Abdulaev, A. A. Bashmaliev.  
(Presented by M. I. Aliev--10 minutes).

Report presented at the 3rd National Conference on Semiconductor Compounds, Kishinev, 16-21 Sept 1963

ABDULLAYEV, G.B.; ALIYEV, G.M.; BASHSHALIYEV, A.A.; KERIMOV, I.G.

Heat conductivity of some compounds of the type  $A^{III}B^V$ . Trudy Inst. fiz.  
AN Azerb. SSR 11:46-51 '63. (MIRA 16:4)  
(Semiconductors—Thermal properties)

24,5300

39130  
S/058/62/000/006/070/136  
A061/A101

AUTHORS: Abdullayev, G. B., Bashshaliyev, A. A., Aliyev, S. A., Aliyev, M. I.,  
Kerimov, I. G.

TITLE: On the heat conductivity of antimony sulfide, selenide, and telluride

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 17, abstract 6E144  
("Izv. AN AzerbSSR. Ser. fiz.-matem. i tekhn. n.", 1961, no. 5, 55 -  
63, Azerb. summary)

TEXT: The heat conductivity ( $\lambda$ ) of  $Sb_2S_3$ ,  $Sb_2Se_3$ , and  $Sb_2Te_3$  has been  
measured in the temperature range of 80 - 400°K. For all these compounds, above  
200 - 250°K, the temperature dependence of the lattice contribution to  $\lambda$  is ob-  
served to deviate from the  $\lambda \sim 1/T$  law by a sharp rise of  $\lambda$ . The photon heat  
conductivity is considered by the authors to be the cause of this phenomenon. ✓

L. Filippov

[Abstracter's note: Complete translation]

Card 1/1

BASHTA, A. A.

BASHTA, A. A. --"External Chest Changes in the Growth of Children Suffering from Tubercular Meningitis, When Streptomycin and PASK Therapy is Used." (Dissertation for Degrees in Science and Engineering Defended At USSR Higher Educational Institutions.) Kharkov Medical Institute. Kharkov, 1955

SO: Knizhnaya Letopis' No. 25, 18 Jun 55

\* For Degree of Candidate in Medical Sciences

Country	USSR
Category	Microbiology. Microbes Pathogenic For Man and Animals. Mycobacteria.
Abs. Jour	Ref Zhur-Biol., No 23, 1958, No 103914
Author	Pinskaya R. M., Shagalova S.Yu., Smaliy K.V., <del>Bashin A.S.</del>
Institute	Khar'kov Scientific Research Tuberculosis Institute
Title	Study of a New Peroral Method of Revaccination With Large Repeated Doses of BCG Vaccine in Uninfected Children
Orig Pub.	Sb. nauchn. tr. Khar'kovsk. n.-i. in-t tuberkul'za, 1957, part I, 57-69
Abstract	No abstract.

Card: 1/1

PIRSKAYA, R.M.; BASHTA, A.S.; ERSHTEYN, P.D.; ROSLIK, S.M.; ARENZON,  
P.Ya.; KORSUNSKAYA, R.M.; VASINA, I.N.; CHEKRYGINA, N.I.;  
VISHNEVSKAYA, Z.Ya.; KUL'CHITSKAYA, I.Ya.

Treatment of patients with tuberculous meningitis without  
subarachnoid administration of antibacterial preparations.  
Probl.tub. 38 no.1:60-67 '60. (MIRA 13:10)  
(MENINGES—TUBERCULOSIS)



BASHTA, T.M., doktor tekhn.nauk, prof.

Regulating minor liquid consumptions. Vest.mash. 42 no.4:43-49  
Ap '62. (MIRA 15:4)  
(Oil hydraulic machinery)

AM

Landing Gear

BASHTA, T. M.

**Issledovanie Dinamiki  
Aviakoless pri Manevraakh  
Samoleta no Zemle**

(Investigation of the Dynamics of Airplane Wheels During Motion on the Ground). T. M. Bashta and I. P. Tolstykh. Experiments were conducted on airplanes with wheels of the following sizes: 600 by 150, 800 by 300, and 1,100 by 400 mm. Landings were made on concrete runways and on dry grass at speeds up to 200 km p.h. Investigations were made on the dynamic compression of the tires, the

rotation of the wheels caused by contact with the ground, the dynamics of the wheels during rolling, the deformation of the tires during acceleration and deceleration of the airplane on the ground, and the coefficient of friction of the tires on concrete runways. The test equipment, methods, and results are discussed. *Tekhnika Vozdushnogo Flota*, February, 1915, pages 1-6, 9 illus.

BASHTA, T.M.

Samoletnye gidravlicheskie ustroistva. Moskva, Glav. red. aviatsionnoi lit-ry,  
1946. 309 p. diagrs.

Aircraft hydraulic equipment.

DLC: TL679.H9B3

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of  
Congress, 1953.

BASHTA, T. M. (Prof. Dr.)

"Aircraft Hydraulic Drives and Units" (Samolentnye Gidravlicheskiye Privody i Agregaty), State Publishing House of the Defense Industry, Moscow, 1951.

Full translation ( 5 parts) AT 46676, F-TS-8318/V

*Bashita, T.M.*

BASHITA, T. M.

Samoletnye gidravlicheskie privody i agregaty. (Konstruktsii i raschet). (Kniga prednaznachena v kachestve posobiia dlia konstruktorov samoletnykh i agregatnykh zavodov...a takzhe v kachestve uchebnogo posobiia dlia studentov starshikh kursov aviatsionnykh institutov.) Moskva, Oborongiz, 1951. 640 p., illus., tables, diagsr.

Title tr.: Aircraft hydraulic gears and assemblies. (Design and construction). (Intended as a textbook for aircraft constructors and students of advanced courses at aeronautical schools.)

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

BASHTA

T.M.

Translation from: Referativnyy Zhurnal, Elektrotehnika, 1957,  
Nr 2, p.218 (USSR)

112-2-4043

AUTHOR: Bashta, T.M.

TITLE: High-Pressure Hydraulic Drive in Automatic Controls  
(Gidravlicheskiy privod vysokogo davleniya v avto-  
maticheskom upravlenii)

PERIODICAL: In Sbornik: Avtomatizatsiya tekhnol. protsessov v  
Mashinostr. Privod i upravleniye mashinami. Moscow,  
AN SSSR, 1956, pp.59-83

ABSTRACT: Bibliographic entry.

Card 1/1

AID P - 5072

Subject : USSR/Engineering

Card 1/1 Pub. 128 - 1/26

Author : Bashta, T. M., Prof., Dr. Tech. Sci.

Title : Throttling control of liquid consumption

Periodical : Vest. mash., 5, 3-5, My 1956

Abstract : The use of throttling valve is one of the most used methods for stabilizing the liquid consumption by hydraulic control devices of various machine tools. Different types of throttling regulators are described, and their testing is discussed. 7 diagrams.

Institution : None

Submitted : No date

BASHTA, T.

"Increasing the Dependability of the Piping of Hydraulic Systems," by Prof T. Bashta, Doctor of Technical Sciences, Grazhdanskaya Aviatsiya, No 9, Sep 56, pp 16-19

Stressing that the dependability of airplane hydraulic systems depends on the reliability of the lines, the author describes the operating conditions of these systems, the causes of their failure, and counter-measures which may be applied as a remedy.

The effect of hydraulic shocks, vibrations, fluctuations of pressures, and oscillations of the hydraulic fluid, both on the lines and on those parts of the plane to which the lines are fastened, are outlined. The author suggests practices and equipment to be used in the vending of lines, their assembly, and dismantling; the life expectancy of the lines; the material of which they may be made; auxiliary equipment for dampening shock and pressure oscillations; etc.

Graphs showing pressure oscillations of the hydraulic fluid, drawings of bending equipment for accurate and distortion-free bending of the lines, tube diameter tables (inside and outside) and recommended bend radii are included in the article.

Sum 1274



<sup>M</sup>  
~~RASETA~~, T., doktor tekhnicheskikh nauk, professor.

Automatic braking of jet airplanes. Grashd.av.13 no.11:18-21 N '56.  
(Airplanes—Brakes) (Jet planes) (MLRA 10:2)

BASHTA, T.M.

Fluid-flow reaction forces in plunger pairs of hydraulic units.  
Stan. 1 instr. 27 no.11:12-15 N '56. (MIRA 10:1)  
(Hydraulic machinery)

**BASHTA, T.M., doktor tekhnicheskikh nauk, professor.**

**Fluid filtration in hydraulic systems. Vest.mash.36 no.12:13-16 D**  
**'56. (MLBA 10:2)**  
**(Filters and filtration)**

BASHTA, T.M.

TECHNOLOGY

BASHTA, T.M. Hydraulicka zarizeni v letadlech. Praha, Statni nakl. technicke literury . Vol. 2. 1957. 337 p.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 3, March, 1959. Uncl.